

## **REMARKS**

In the non-final 12 June 2009 *Office Action*, the Examiner allows Claims 13-20; rejects Claims 1-3, 8-12, and 21-22; and objects to Claims 4-7. Applicant thanks the Examiner for the careful consideration and examination and for allowance of Claims 13-20. Now new matter is believed to be introduced by the present Response.

Applicant submits this Response solely to facilitate prosecution. Applicant reserves the right to present new or additional claims in this Application that have similar or broader scope as originally-filed. Applicant also reserves the right to present additional claims in a later-filed application that have similar or broader scope as originally-filed. Any amendment, argument, or claim cancellation is not to be construed as abandonment or disclaimer of subject matter.

Upon entry of this Response, Claims 1-22 remain pending. It is respectfully submitted that the present Application is in condition for allowance for at least the following reasons.

### **I. Claim 22 is Patentable in Accordance with § 101 and § 112**

The Examiner rejects Claim 22 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicant amends Claim 22 to address the Examiner's concern. Withdrawal of the rejections to Claim 22 is respectfully requested.

### **II. Claims 1-12 and 21-22 are Patentable in Accordance with § 103**

The Examiner rejects Claims 1-3, 8-11, and 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Bäcklund (USPN 6,491,828). The Examiner also rejects Claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Bäcklund in view of Dubrow et al. (US 2005/0221072). Applicant respectfully traverses the § 103 rejection and respectfully asserts that all pending claims are allowable over Bäcklund and the cited references.

The Examiner correctly acknowledges that Bäcklund fails to disclose that Bäcklund's device results in a reduction in flow disturbance. Bäcklund, however, also fails to disclose any feature present in Claims 1, 8, or 21-22. Bäcklund teaches a device that operates in a manner opposite to Applicants claimed device. Bäcklund's device does not split flow at the inlets into two branches, as Applicant claims. Bäcklund's device also does not merge the branches at the outlets, as Applicant claims.

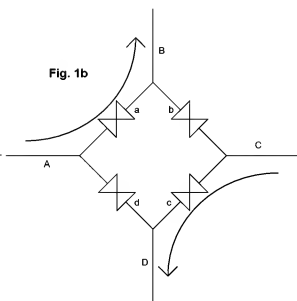
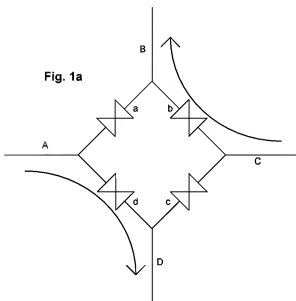
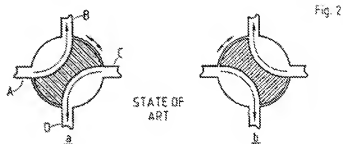
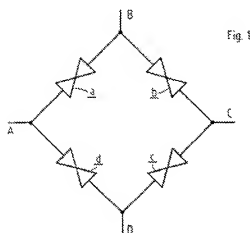
Backlund's device only allows flow from the first inlet to the first outlet and from the second inlet to the second outlet, or, alternatively, the device will allow flow from the first inlet to the second outlet and from the second inlet to the first outlet. Bäcklund's device does not, however, allow flow from the first inlet to simultaneously flow to the first and second outlets or allow flow from the second inlet to simultaneously flow to the first and second outlets. As Bäcklund explains:

The arrangement of FIG. 1 includes four 2-way valves a, b, c and d interconnected so that valves a and d have one common port A, valves a and b have one common port B, valves b and c have one common port C, and valves c and d have one common port D. **A flow coming in at port A may be directed through valve a to port B, and, at the same time a flow coming in at port C may be directed through valve c to port [D** (Application contains a typographical mistake in referring to this port as "port C." This port must be port D. It is not possible for flow to flow in through port C, through valve c, and exit through port D; flow must traverse, in through port C, through valve c, and exit through port D)]. **Alternatively, the flow coming in at port A may be directed through valve b to port D and, at the same time the flow coming in at port C may be directed through valve b to port [B** (This is another typographical mistake. Flow coming in through port C and directed through valve b, must exit through port B, and not port D.)). (Backlund, Col. 2, Lines 22-45).

Backlund's specification and illustrations disclose a device with two inlets (A and C) and two outlets (B and D). Bäcklund's device, shown schematically in Fig. 1, is specifically designed to perform like the arrangement in Backlund's FIG. 2 (shown below). Therefore, Bäcklund's device actually operates as illustrated in Fig. 1a and Fig. 1b (shown below). Bäcklund's device is only capable of allowing flow in through A and out through B at the same time as allowing flow in through C and out through D, as shown in Fig. 1b. When Bäcklund's device operates as shown in Fig. 1b, valves A and C are open to allow flow while valves B and D are closed to block flow. Bäcklund's device can also allow flow in through A and out through D at the same time as allowing flow in through C and out through B, as shown in Fig. 1a. When Bäcklund's device operates as shown in Fig. 1a, valves B and D are open to allow flow while valves A and C are closed to block flow.

As a result, Bäcklund fails to disclose a flow merging device that splits a first flow and a second flow at a flow merging device into a first branch and a second branch, as Applicant claims. Bäcklund also fails to disclose merging the first branches and the second branches of the first and second inlet flows together, such that the flows of the first branches and/or the second

branches are substantially parallel at the sight of merging, as Applicant also claims. Thus, Bäcklund fails to disclose any of Applicants' claimed features.

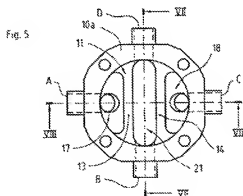


Bäcklund's device teaches away from the parallel merging of inlet branches claimed by Applicant. Even if Bäcklund can be read to disclose splitting a first inlet flow and a second inlet flow into a first branch and second branch and, further, merging the first branches and the second branches at a first outlet and a second outlet respectively, **the branches are not disclosed to be parallel at the site of merging.** In fact, even if the device in Bäcklund is capable of merging, Fig. 5 (provided below), which is a depiction of the physical device disclosed by Bäcklund,

makes clear that the branches would merge anti-parallel to each other. The anti-parallel merging would, therefore, teach away from the parallel merging claimed by Applicant. Because Bäcklund's device teaches away from Applicant's claimed invention, it would not have been obvious to modify Bäcklund's device to obtain Applicant's claimed invention.

Additionally, there are significant disadvantages to merging two inlet flows anti-parallel to each other. Those disadvantages are the resulting turbulence at the site of anti-parallel merging and the loss of momentum of the inlet flows. For example, if Bäcklund's device were used as a heart valve, the turbulence and loss of momentum would increase the amount of work that must be performed by the heart to pump blood through the valve; thus, a heart would wear out much faster than with a device producing little turbulence or loss of momentum, such as a device that merges flows parallel to each other, as Applicant claims. In addition, Bäcklund's valves and narrow orifices would likely yield blood damage due to its rough transitions in geometry shape from the inlets to the outlets.

Further, if Bäcklund's device were modified to obtain Applicant's claimed invention, Bäcklund's device would be rendered inoperable for its intended purpose. The purpose of Bäcklund's device is to allow flow from a first inlet to a first outlet and flow from a second inlet to a second outlet or, **alternatively**, to allow flow from a first inlet to a second outlet and flow from a second inlet to a first outlet. If Bäcklund's device were modified to obtain Applicant's claimed invention, Bäcklund's device must allow flow from a first inlet to a first outlet and a second outlet and, **simultaneously**, allow flow from a second inlet to a first outlet and a second outlet. This type of modification would render Bäcklund's device inoperable for its intended purpose. As a result, it would not have been obvious to modify Bäcklund's device to obtain Applicant's claimed invention.



For at least the reasons stated above, Applicant respectfully submits that the pending claims are patentably distinct from the cited references. Applicant, therefore, respectfully requests that the Examiner withdraw the rejection to these claims.

### **III. Fees**

Applicant believes no claims fees are due, as the total number of Claims, and independent Claims, is equal to the number of Claims paid for upon filing this Application. Further, this Response is being filed within three months of the Office Action. Thus, no other fees are believed due. Authorization to charge Deposit Account No. 20-1507, however, is given herein should additional fees be due.

### **IV. Conclusion**

This *Response* is believed to be a complete response to the 12 June 2009 *Office Action*. Applicant respectfully asserts that the pending claims are in condition for allowance and respectfully requests passing of this case in due course of patent office business. If the Examiner believes there are other issues that can be resolved by a telephone interview, or there are any informalities remaining in the application which may be corrected by an Examiner's amendment, a telephone call to Hunter Yancey at (404) 885-3696 is respectfully requested.

Respectfully submitted,  
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